

What is claimed is:

1. A moving image processing device,  
comprising:

5 information collecting means for collecting first  
information about a motion vector for each frame from  
moving image data which is compressed with inter-frame  
prediction encoding, and for also collecting second  
information about a correlation with a  
10 preceding/succeeding frame without decoding an image  
for each frame;

evaluation function calculating means for  
calculating a value of an evaluation function which  
includes the first and the second information collected  
15 by said information collecting means as parameters; and

scene change determining means for determining a  
scene change by making a comparison between the value  
of the evaluation function, which is calculated by said  
evaluation function calculating means, and a threshold  
20 value.

2. The moving image processing device  
according to claim 1, wherein:

said information collecting means collects a  
25 scene change interval; and

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said evaluation function calculating means calculates the value of the evaluation function which includes the first and the second information, and the scene change interval as parameters.

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3. The moving image processing device according to claim 2, further comprising

scene change information storing means for storing the first and the second information, and the  
10 scene change interval as scene change information.

4. The moving image processing device according to claim 3, wherein

said evaluation function calculating means  
15 calculates the value of the evaluation function by using the scene change information read from said scene change information storing means; and

said scene change determining means determines a scene change by making a comparison between the  
20 calculated value of the evaluation function and a threshold value.

5. The moving image processing device according to claim 1, wherein

25 said information collecting means collects the

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first information about a motion vector for each frame from first header information, which is added in units of frames of the compressed moving image data, and second header information, which is added in units of constituent elements of the frame, without decoding an image of the frame.

6. The moving image processing device according to claim 1, wherein

10 said information collecting means collects the second information about a correlation with a frame preceding/succeeding each frame from first header information, which is added in units of frames of the compressed moving image data, and second header  
15 information, which is added in units of constituent elements of the frame, without decoding an image of the frame.

7. The moving image processing device  
20 according to claim 1, wherein

the evaluation function is a function into which parameters are linearly combined with coefficients that are respectively assigned to the parameters.

25 8. The moving image processing device

FOOTNOTES

according to claim 1, wherein

5       said information collecting means collects the  
number of bidirectionally predicted regions having both  
a forward prediction motion vector and a backward  
prediction motion vector for each frame, and outputs  
the first and the second information to said evaluation  
function calculating means as parameters only for a  
frame within a frame group which satisfies a condition  
that the numbers of bidirectionally predicted regions  
10    in consecutive frames are small.

9.     The moving image processing device  
according to claim 1, wherein

15       said information collecting means outputs the  
number of bidirectionally predicted regions having both  
a forward prediction motion vector and a backward  
prediction motion vector in each frame within a frame  
group to said evaluation function calculating means as  
a parameter of the evaluation function.

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10.    The moving image processing device  
according to claim 8, wherein

25       said information collecting means collects an  
appearance interval of a frame that becomes a scene  
change within a frame group which satisfies a condition

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that the number of bidirectionally predicted regions in consecutive frames are small, and outputs the appearance interval of the frame to said evaluation function calculating means as a parameter of the evaluation function.

11. The moving image processing device according to claim 10, further comprising scene change information storing means for storing, as scene change information, the first and the second information of a frame within a frame group which satisfies a condition that the number of bidirectionally predicted regions in consecutive frames are small, and the appearance interval of the frame which becomes a scene change.

12. The moving image processing device according to claim 11, wherein:  
said evaluation function calculating means calculates the value of the evaluation function by using the scene change information read from said scene change information storing means; and  
said scene change determining means determines a scene change by making a comparison between the calculated value of the evaluation function and a

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threshold value.

13. The moving image processing device according to claim 1, wherein

5 the first information is the number and magnitudes of motion vectors, whereas the second information is a square measure of a region having a low correlation with a preceding/succeeding frame.

10 14. The moving image processing device according to claim 1, wherein

the evaluation function is a function whose parameters are determined according to an appearance cycle of an intra-frame encoded frame or a forward  
15 predicted frame in the encoded moving image data.

15. A moving image processing method, comprising the steps of:

(a) collecting first information about a motion  
20 vector for each frame from moving image data which is compressed with inter-frame prediction encoding;

(b) collecting second information about a correlation with a preceding/succeeding frame without decoding an image of each frame;

25 (c) calculating a value of an evaluation

function which includes the first and the second information as parameters; and

(d) determining a scene change by making a comparison between the calculated value of the evaluation function and a threshold value.

16. The moving image processing method according to claim 15, further comprising the step of

(e) collecting a scene change interval, wherein the evaluation function which includes the scene change interval as a parameter is calculated in the step (c).

17. The moving image processing method according to claim 15, wherein

the first information about a motion vector for each frame is collected from first header information, which is added in units of frames of the compressed moving image data, and second header information, which is added in units of constituent elements of the frame, without decoding an image of the frame in the step (a).

18. The moving image processing method according to claim 15, wherein

the second information about a correlation with a frame preceding/succeeding each frame is collected from first header information, which is added in units of frames of the compressed moving image data, and second  
5 header information, which is added in units of constituent elements of the frame, without decoding an image of the frame in the step (b).

19. The moving image processing method  
10 according to claim 15, further comprising the step of

(e) collecting the number of bidirectionally predicted regions having both a forward prediction motion vector and a backward prediction motion vector, wherein

15 the value of the evaluation function is calculated only for a frame within a frame group which satisfies a condition that the numbers of bidirectionally predicted regions in consecutive frames are small in the step (c).

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20. The moving image processing method according to claim 19, wherein

the evaluation function calculated in the step (c) includes, as a parameter, the number of bidirectionally  
25 predicted regions having both a forward prediction



motion vector and a backward prediction motion vector in each frame within the frame group.

21. The moving image processing method  
5 according to claim 19, further comprising the step of  
collecting an appearance interval of a frame that  
becomes a scene change within a frame group which  
satisfies a condition that the numbers of  
bidirectionally predicted regions in consecutive  
10 frames are small, wherein

the evaluation function calculated in the step (c)  
includes the appearance interval of the frame as a  
parameter.

22. The moving image processing method  
15 according to claim 15, wherein

the first information is the number and magnitudes  
of motion vectors, whereas the second information is  
a square measure of a region having a low correlation  
20 with a preceding/succeeding frame.

23. A computer-readable storage medium on which  
is recorded a program for causing a computer to execute  
a process, said process comprising the steps of:

25 (a) collecting first information about a motion

vector for each frame from moving image data which is compressed with inter-frame prediction encoding;

(b) collecting second information about a correlation with a preceding/succeeding frame without  
5 decoding an image for each frame;

(c) calculating a value of an evaluation function which includes the first and the second information as parameters; and

(d) determining a scene change by making a  
10 comparison between the calculated value of the evaluation function and a threshold value.

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